

REMARKS

Claims 1-15, 35, 41-42, and 53 are pending in the present application.

In the Office Action, claims 1-2 and 5-15 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Gafken (U.S. Patent No. 6,026,016) in view of Yishay (U.S. Patent No. 5,704,039). Claims 3-4, 35, 41-42, and 53 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Gafken and Yishay in view of Short, "Embedded Microprocessor Design." The Examiner's rejections are respectfully traversed.

Independent claims 1, 35, 41-42, and 53 set forth enable bits associated with a hardware debugging mode. The enable bits may be stored in a register and reset by a control logic. Claims 35, 41-42, and 53 set forth enable bits associated with a hardware debugging mode that may be stored in a register and reset by a control logic and associated enable lock bits. Hardware debugging modes are known in the art. For example, Advanced Micro Devices, Inc. provides a hardware debugging interface called the Hardware-Debug-Test (HDT) mode, which is based on the JTAG protocol. Other examples of hardware debugging interfaces include the background debug mode (BDM) provided by Motorola and the common on-chip processor (COP) provided by IBM.

In one embodiment of the present invention, the hardware debugging mode, such as the HDT mode, may be enabled or disabled based on one or more enable bits. For example, an HDT enable register 3115 is configured to store one or more HDT enable bits signifying whether HDT mode is enabled or disabled. The HDT reset logic 3120 is configured to set the one or more HDT enable bits to a default state upon a reset of the processor 805. Multiple embodiments for controlling the HDT modes are contemplated, such as those illustrated in Figs. 20A and 20B. In one embodiment, the HDT mode is enabled as the default on non-production processors 805

used for engineering and testing. The HDT mode may be disabled as the default in standard production processors 805. In another embodiment, illustrated in Fig. 20A, the default state may be stored in and read from the NVRAM 3130. In this embodiment, the default state may be changeable, but in the illustrated embodiment, the default state is set to disabled. In still another embodiment, illustrated in Fig. 20B, the default state is set using a strapping option. The default value is provided to the HDT reset logic 3120B through the pull-up (or pull-down) resistor 3145. See Patent Application, page 65, line 17 – page 66, line 5.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). Gafken describes a lock bit array 705 that includes a read lock bit, which may prevent a corresponding block from being accessed in response to a memory read operation directed to that block. See Gafken, Figure 7 and related discussion. The data blocks may be unlocked for updates to information and to easily fix bugs in code (e.g., software bugs) stored in the locked blocks. See Gafken, col. 14, ll. 27-39. However, Gafken is completely silent with regard to hardware debugging and therefore fails to teach or suggest enable bits for a hardware debugging mode, as set forth in claims 1, 35, 41-42, and 53. Applicants also note that the Examiner has admitted that Gafken does not teach or suggest enable bits for a hardware debugging mode.

Yishay states that original equipment manufacturers must be able to easily disable secured modes in order to debug programs in a data processing system. See Yishay, col. 1, ll. 25-31. Accordingly, Yishay is concerned with debugging software and not hardware. Yishay is completely silent with regard to hardware debugging and therefore fails to teach or suggest enable bits for a hardware debugging mode, as set forth in claims 1, 35, 41-42, and 53. The

Examiner relies upon Short to describe using non-volatile memory to store data. However, Short fails to remedy the fundamental deficiencies of Gafken and Yishay.

For at least the aforementioned reasons Applicants respectfully submit that the prior art of record fails to teach or suggest all the limitations of the claimed invention. Accordingly, Applicants submit that the Examiner has failed to make a *prima facie* case that the present invention is obvious over the prior art of record. Applicants request that the Examiner's rejections of claims 1-15, 35, 41-42, and 53 under 35 U.S.C. § 103(a) be withdrawn.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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